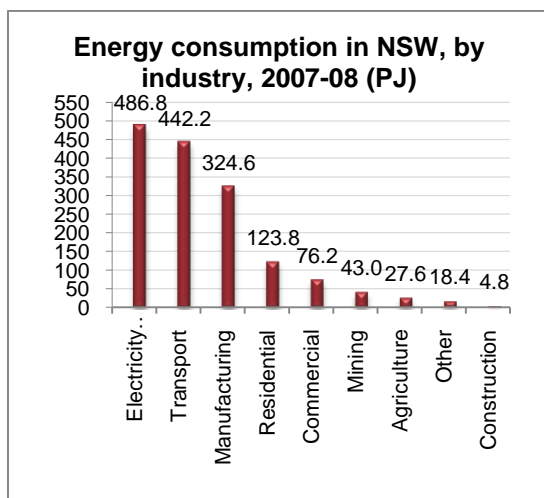




## Energy and Greenhouse in the NSW Minerals Industry

### How much energy is used by the NSW minerals industry?

Energy is vital to the NSW minerals industry. During 2007-08, the NSW minerals industry used 43PJ of energy.<sup>1</sup> This represents under 3% of total energy consumption in NSW, which is relatively low compared to other industries.



Source: ABARE, 2009

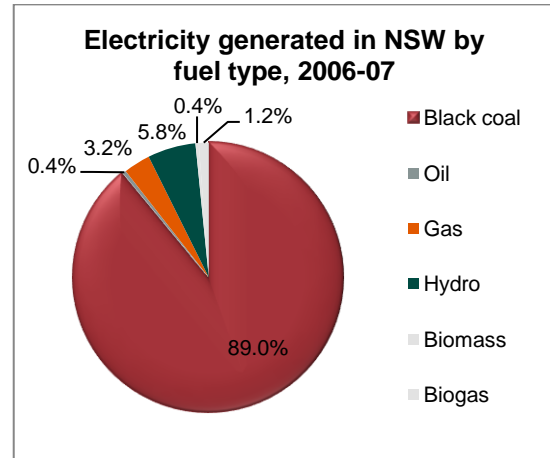
Mines use energy from a variety of sources including:

- Electricity: for machinery, processing equipment, fans, pumps, office equipment and lighting
- Petroleum fuels: for transport, haulage and machinery
- Natural gas: for on-site electricity generation and machinery operation
- Solar energy: mostly for remote equipment.

### How much electricity is generated from coal in NSW?

NSW mines supply coal for the state's power generation. Coal fired power stations currently generate 89% of electricity in NSW, with the remainder coming from gas fired plants, hydro power and renewable sources.<sup>2</sup>

Coal provides an affordable and reliable source of power for NSW households and businesses and is one of the most competitively priced electricity sources in the world.



Source: ABS, State and Regional Indicators, June 2009

### How does the minerals industry contribute to greenhouse gas emissions?

Energy use by the NSW minerals industry contributes to greenhouse gas (GHG) emissions. Coal mining also indirectly contributes to emissions when it is burned for electricity generation or used to produce steel. These are called downstream GHG emissions.

At some coal mines, methane and carbon dioxide are released from the coal seam during mining. These are known as 'fugitive GHG emissions'. Fugitive GHG emissions are estimated to have contributed 10% of NSW's total CO<sub>2</sub>-e emissions in 2007.<sup>3</sup>

### What is the NSW minerals industry's position on climate change?

The NSW minerals industry accepts the science of climate change and its responsibility to manage its contribution to GHG emissions and help reduce global GHG emissions.

The minerals industry believes a mix of solutions is required to address climate change including: cleaner fuel, such as advanced renewables and low emission coal technology as well as demand management and energy efficiency measures.

The coal mining industry is actively addressing climate change and is voluntarily contributing \$1 billion over ten years for development and commercial deployment of technologies that will reduce emissions from coal-fired electricity generation. This is in addition to billions of dollars invested by individual companies and state and federal governments. More information can be found at [www.newgencoal.com.au](http://www.newgencoal.com.au).

The industry also works with other organisations including the CSIRO and the CO2CRC - which focus on technologies

to reduce GHG emissions. In 2006 the NSW Government announced a partnership with the CO2CRC to investigate the potential for pilot sites in NSW to store carbon captured from power stations. More information can be found at [www.co2crc.com.au](http://www.co2crc.com.au).

## How is the industry reducing its greenhouse gas emissions?

The NSW minerals industry is active in reducing its GHG emissions through energy efficiency and demand management, and reducing fugitive GHG emissions.

### **Energy Efficiency and Demand Management**

Efficient energy use is an important focus for mining companies. Energy use makes up a large proportion of a mine's operating costs. The implementation of efficiency measures can provide environmental benefits such as reduced GHG emissions and lead to economic savings.

Some of the methods used to monitor and improve energy efficiency include:

- Energy audits
- Energy metering
- Process and productivity improvements
- Investment in efficient equipment and technology
- Equipment maintenance
- Strategic management of transport fleets
- Selection of fuel types (eg. selecting liquefied natural gas or biodiesel over diesel fuel).

The NSW Government requires large energy users – which includes most mining companies – to produce Energy Savings Action Plans. These plans are prepared for nominated sites and determine how energy is used, identify opportunities for efficiency improvements and create a plan for implementing energy efficiency measures. Progress against the plan's targets is reported annually.

The Federal Government has also introduced *Energy Efficiency Opportunities* legislation to encourage improved energy efficiency within companies that require a lot of energy. The minerals industry is heavily involved in this program.

The majority of the mining industry reports GHG emissions and energy use under the Australian Government's National Greenhouse and Energy Reporting System. The NSW Minerals Council has produced a Fact Sheet which is accessible at: <http://www.nswmin.com.au/Media-Speeches-and-Info/Publications-and-Fact-Sheets/default.aspx>

### **Reducing Fugitive Greenhouse Emissions**

Methane and carbon dioxide (CO<sub>2</sub>) are found naturally within the earth, including in coal seams. A proportion of these gases are released as fugitive GHG as a result of mining. The minerals industry measures and reports on these fugitive emissions and invests in technologies to reduce them. Methane has 21 times the global warming potential of CO<sub>2</sub> and is a strong area of focus for the industry in reducing GHG emissions.

Coal seam methane is a source of natural gas. Several coal mines in NSW generate electricity by burning methane drained from coal seams during mining. The electricity can be used to power on-site operations or sold for distribution in the State electricity grid. This reduces the demand for electricity from other sources and decreases the amount of methane escaping into the atmosphere. The Illawarra region in NSW is home to one of the world's largest coal

seam methane power plants, the Appin and Douglas Park power station, generating enough electricity to power approximately 60,000 homes.

Where it is not technically feasible to burn methane for power generation, companies may flare the gas to reduce emissions. In some cases the methane levels are too low for flaring. Each year the industry invests millions of dollars in research to develop new methods for reducing these emissions. Case studies addressing the capture of coal seam methane can be found at [www.nswmin.com.au](http://www.nswmin.com.au).

Several mining companies in NSW have been voluntary participants in the NSW Greenhouse Gas Abatement Scheme, which sets GHG reduction targets. By taking part, companies can generate GHG abatement credits for undertaking approved projects, such as fugitive mine gas flaring and power generation. More information on the Scheme can be found at [www.greenhousegas.nsw.gov.au](http://www.greenhousegas.nsw.gov.au).

## Glossary of Terms

**Co2-e:** Carbon dioxide equivalent

**GHG:** Greenhouse gas

**Petajoule (PJ):** 10<sup>15</sup> joules, or the heat energy content of about 43,000 tonnes of black coal or 29 million litres of petrol.

## References and more information

- Australian Bureau of Agricultural and Resource Economics (ABARE): [www.abare.gov.au](http://www.abare.gov.au)
- Department of Climate Change, *National Greenhouse Gas Inventory*: [www.climatechange.gov.au/inventory/](http://www.climatechange.gov.au/inventory/)
- NSW Department of Environment, Climate Change and Water: [www.environment.nsw.gov.au/](http://www.environment.nsw.gov.au/)

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<sup>1</sup> Australian Bureau of Agricultural and Resource Economics (ABARE), *Australian Energy Statistics*

<sup>2</sup> Australian Bureau of Statistics (ABS) *NSW State and Regional Indicators*, June 2009

<sup>3</sup> Department of Climate Change (2009) *Australian Greenhouse Emissions Information System, National Greenhouse Gas Inventory Total*